LECTURE 1: WHY SHOULD WE AT UCONN THINK ABOUT COMMERCIALIZATION?

Office of the Vice President for Research
Technology Commercialization Partners

Also with permission from:
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What is Commercialization?

Transformation of knowledge/research into commercial products and services

- Lab
- Discovery
- Research

Further development, application, intellectual property

Products that others can use $$
Why Should I care?

Benefits You, the University and Society!

• Increase your personal satisfaction and money
• Commercial & public recognition of your work
• Attracts new R&D resources & partnerships for lab, as a result of research funds success
• Patents as well as publications are inputs for your tenure
• Innovation and Entrepreneurship are foundations upon which a knowledge economy is built.
• Provides means for getting innovative products to the market for public benefit
• Obtains return on investment
• Economic value/ Creates wealth and jobs
Commercializing My Invention: Is It Worth It?

- YES, and it’s your job and the job of others.
- The public benefits when new products are developed.
- Development usually requires patent protection to enable companies to take necessary financial risks.
- Patent prosecution can always be (and often is) abandoned - but cannot be (re)started when it’s too late and disclosures have been made.
- Won't it interfere with sharing of my reagents?
  - It need not!
- What about the culture of publish or perish?
  - Can have both patents & publications!
Can Commercialization Make Me Rich As An Inventor?

• Answer - yes and no!
• Academic & Federal labs share license and royalty payments with individual inventors.
• There are payment caps or restrictions on the level of commercial involvement at most institutions.
• Largest rewards (and risks!) and level of involvement come from entrepreneurial activity separate from the lab.
Background

New technology-based companies have spun out of both:
• Existing companies (with industrial experience, strong market links)
• Universities/academics (emerging technologies with the potential of many applications but a lack of strategic choices of application)

Research Drivers stem from:
• Fundamental research for the pure sake of knowledge
  o which may or may not result in being an enabler for further research leading to eventual commercialization
• Research responding to a need
  o technology or market pull – a great position to be in
• Research not responding to a need
  o technology push – you must create the demand
  o a not so great position to be in but potentially and exciting challenge
The Scientist’s Dilemma

• The invention is only a good start
  o Inventions are important, but not everything important is an invention!
  o "Scientific Invention" is not an occupation for the ELITE (Kary B. Mullis)
• Commercialization will require further development than many scientists typically go
  o Uncharted R&D waters - we can predict everything but the future!
• Commercialization will take a lot of time and may distract from other “basic” research
• Interacting with the “Company” and the most-likely-separate entrepreneur is both enlightening and distracting
The Scientist’s Basic Obligations For Successful Commercialization

Be Very Careful!!!!

• Keep accurate lab notebooks - bound lab notebooks are essential - dated and signed.
  o Witnessed as well is even better!

• Disclosure - abstracts, meeting talks, publications online all constitute "disclosure"
  o You risk loss of non-U.S. rights! (Patent protection)
  o You risk of U.S. rights too if you wait more than a year after "disclosure" to see protection

• Beware the "website trap"
  o Don’t overly publish on the Internet or your website until you get the “OK” from patent advisors
The Scientist’s Basic Obligations For Successful Commercialization (cont.)

• Not all inventions and technologies will be marketable products. You will need early customer feedback and constant customer interaction.

• Work with tech transfer office, law firm and commercial partners.
  o At UConn: Technology Commercialization Partners

• CDAs/MTAs (Confidential Disclosure Agreements / Material Transfer Agreements)
  o Are essential for the transfer of information and reagents
  o Don’t aim to please interested third parties without first contacting the Technology Commercialization Partners
Scientists As Entrepreneurs

• Scientific knowledge & research alone will not generate economic prosperity.
• New ideas from research are complex & not always understood and commercialized by existing firms.
• Often an entrepreneur is needed to facilitate development and harvest research results of new ideas from research labs.
  “a person who organizes and manages any enterprise, especially a business, usually with considerable initiative and risk.” (dictionary.com)
• “Ivory Tower-only" image of scientists is changing → Now “local heroes of the global village”
(Source: Kauffmann Foundation)
Why Have Scientists Succeeded In the U.S. As Entrepreneurs?

- Not due to geographic origin (many not native U.S.)
- More institutional, legal and organizational support for entrepreneurship in U.S.
- Bayh-Dole Act seen as stimulus for commercializing federally-funded research in U.S.
- Grants a proven engine for entrepreneurship.
  - 25% of NCI grant recipients from 1998-2003 started their own company.
  - SBIR grants foster the kind of research that translates new science findings into product opportunities.
- Incubators, technology parks, start-up programs, entrepreneurial training programs, entrepreneurial networks all have assisted and can even provide the spark needed.

(Source: Kauffmann Foundation; Washington Post)
From Lab Bench to Customer: It is a process!

- Scientific Discovery
- Intellectual Property
- Technology Transfer
- R&D Clinical Trials
- Corporate Partnership
- Financial Capital
- Regulatory
- Manufacturing
- Sales & Marketing
Example: New Biomedicines have a long and complicated pathway!

Full Development
- Studies in Healthy Volunteers (Phase I)
- Large Amounts of Candidate Medicine Synthesized
- Project Team and Plans
- Clinical Data Analysis
- Synthesis of Compound
- Screening

Exploratory Development
- Clinical Data Analysis
- Formulations Developed
- Screening
- Early Safety Studies

Registration
- Clinical Data Analysis
- Extensive Safety Studies
- Candidate Medicine Tested in 3-10,000 Patients (Phase III)

Discovery
- Extensive Safety Studies
- Candidate Medicine Tested in 3-10,000 Patients (Phase III)
Long Process: Lab to Customer

You will need HELP!
You will need $
You will need a good team
BUT! Help is available to you
And in the end, you will help people

Being an Entrepreneur is Daunting! But working with a PARTNER helps you to focus on what you already do well.
Your Partner at UConn: Technology Commercialization Partners (TCP)

Under the Office of Vice President for Research (OVPR)

- TCP evaluates inventions for patenting
- TCP helps management of patents
- TCP works closely with inventors to develop a pathway, guide research for commercialization if necessary and manage progress
- TCP works with legal and corporate law firms
- TCP helps start a company if applicable, including legal aspects and start-up issues
- TCP can help prepare the company, when ready, for funding
- TCP identifies and negotiates with a commercial partner for collaboration agreements
- TCP manages relationships with commercial partners
UConn Process

1. Inventor Submits Disclosure to TCP
2. TCP evaluates for Patentability/Commercialization
   - External Input
3. TCP works with Inventor to Guide Research toward Commercialization Readiness
4. TCP evaluates for Start-Up
   - TCP helps to Establish New Company
   - TCP licenses Technology
Technology Transfer at UConn

• Technology Transfer comprises many steps:
  o Identify inventions from UConn research
  o Evaluate inventions, including market size, application
  o Patent (usually)
  o (Usually at this point, further development is needed)
  o Contact potential commercial partners
  o License and/or start a new company
  o Company develops/sells products or services
  o UConn and Inventors Receive income from royalties or equity

• Bayh-Dole Act-
  o For federally-funded research, permits a university, small business, or non-profit institution to elect to pursue ownership of an invention in preference to the government.

• Who Get’s the Money?
At UConn, the money gets shared 1/3, 1/3, 1/3 (for license)

After patent and legal fees

- Inventor(s) 34%
- Inventor's Research 16%
- Inventor's Department 10%
- Inventor's Dean 7%
- University 33%
Resources & Programs to Help

• UConn Technology Commercialization Partners
  o Guidance on marketability, direction, etc.
  o Acts as or identifies business mentors, advisors or CEO’s

• I-Corp (by NSF)
  o $50,000 grant for faculty to participate in 8 week boot camp about commercialization
  o Team engages with industry, customers, partners and competitors
  o Very big time commitment, but a lot of details get flushed out in process

• CT Innovations
  o Various programs and funding

• Many industry-specific programs
  o CleanTech Open
  o Start-Up Weekends – at UConn, or by Metro Hartford Alliance, etc
Resources & Programs to Help

- Entrepreneurship competitions (in combination with students)
  - UConn Business School and CCEI
  - Innovation Quest (iQ)
  - D.E. Crow Innovation Prize

- Entrepreneurship courses-
  - Found in Schools of Business and Engineering

- US Small Business Association
  - Many local offices

- CT Next- Connecticut's Innovation Ecosystem
Summary: Technology Commercialization is Exciting & Important

- Increasingly integrated into program goals of the University
- Can increase public impact of your science.
- You can increase your personal satisfaction, recognition and money.
- Institutional staff is available to support commercialization of your inventions.
- Highest opportunity for control / reward come from entrepreneurial activity away from the lab.